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Fiber Optic Devices

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Fiber Optic Rotary Joints

Fiber Optic Rotary Joints (FORJs) are to optical signals what electrical slip rings are to electrical signals, a means to pass signals across rotating interfaces, particularly when transmitting large amounts of data. FORJs maintain the intrinsic advantages of fiber end to end. Moog Components Group has been producing Fiber Optic Rotary Joints for over twenty years.

Single or Multi-Channel

FORJs are available in single and multi-channel options. The most cost and size efficient options are the single and dual channel designs. If more than two fibers are present in a system, multiplexing solutions are available to combine multiple channels onto one or two fibers to allow the use of a one or two channel FORJ.

In cases where more than two fibers are required, Moog has three designs: the FO190, FO242 and FO291 where single channel modules are stacked to achieve the desired number of channels. The FO300 uses a common de-rotating optical element for all fiber channels.

Singlemode or Multimode

Singlemode fibers allow the propagation of a single mode of optical energy due to their small core size and small numerical aperture and for this reason they exhibit very high bandwidths at wavelengths between 1270nm and 1650nm. Because of these smaller core sizes and numerical aperture, singlemode FORJs must be designed with very precise mechanical alignments. The alignment requirements are dependent on the operating wavelength of the FORJ. Standard singlemode FORJs are constructed for operation at 1310nm and 1550nm wavelengths. These FORJs can be expected to perform to the same specifications when used at other wavelengths between 1270nm and 1650nm, for instance, at coarse wavelength-division multiplexing (CWDM) wavelengths, which include 18 wavelengths of 1271nm to 1611nm in 20nm increments. FORJs can be tested at any or all CWDM wavelengths before shipment if desired in order to characterize performance at these wavelengths.

Multimode fibers have large cores and large numerical apertures allowing the propagation of multiple modes of optical energy. These features allow large amounts of light to be transmitted from sources such as LEDs and VCSELs, but result in higher attenuation and dispersion. Because of these attenuation and dispersion features, multimode fiber systems are typically used for shorter datacom links. Most multimode systems operate at 850 nm and 1300 nm.

Features

- Ruggedized for harsh environments
- Compact sizes
- Variety of configuration options
- Custom designs available

Single Channel FORJ



Our single channel (single-pass) FORJs are available with singlemode or multimode fibers. They are passive and bidirectional, and allows the transfer of optical signals across rotational interfaces.

[Learn More >](#)

Multi-Channel FORJ



When multiple fibers are needed, our Multi-channel FORJs are available with singlemode or multimode fibers. They are passive and bidirectional, and allows the transfer of optical signals across rotational interfaces.

[Learn More >](#)

Contact Us

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Literature

[Fiber Optic Rotary Joint Product Guide](#)

Related Products

- [Condition Monitoring](#)
- [Fiber Optic Multiplexers \(Media Converters\)](#)
- [Fluid Rotary Unions](#)
- [Integrated Motion Assemblies](#)
- [Motors](#)
- [Resolvers](#)
- [Slip Rings](#)

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